

Work Order # \_\_\_\_\_ Job # \_\_\_\_\_ Activity # \_\_\_\_\_

1. Work requester fills out this section

STANDING WORK PERMIT ☐

Requester: P. KROON Date: 5/25/04 Ext. 5114 Dept/Div/Group: PO/PHENIX  
Other Contact person (if different from requester): S. MARRING Ext. 3704  
Work Control Coordinator P. KROON Start Date 5/27/04 Est. End Date 8/15/04  
Description of Work / Problem: REMOVE, MODIFY AND REPLACE POWER SUPPLY MODULES  
ON DKIFT CHAMBER ON WEST CARRIAGE  
— SEE ATTACHED - SHEET —  
Building 1008 Room IR Equipment N/A Service Provider PHENIX

2. Work requester, service provider, and ES&H (as necessary) fill out this section or attach analysis

**ES&H Analysis**

**RADIATION CONCERNS** ☒ NONE ☐ Activation ☐ Airborne ☐ Contamination ☐ Radiation ☐ OTHER \_\_\_\_\_  
☐ Special nuclear materials involved, notify Isotope Special Materials Group ☐ Fissionable materials involved, notify Laboratory Criticality Officer

**SAFETY CONCERNS** ☐ NONE  
☐ Adding / Removing Walls or Roofs ☐ Confined Space\* ☐ Explosives ☐ Lead\* ☐ Penetrating Fire Wall  
☐ Asbestos\* ☐ Corrosive ☐ Flammable ☐ Magnetic Field ☐ Pressurized Systems  
☐ Beryllium\* ☐ Cryogenic ☐ Fumes/Mist/Dust\* ☐ Material Handling ☐ Rigging/Critical Lift  
☐ Biohazard\* ☒ Electrical ☐ Heat/Cold Stress\* ☐ Noise\* ☐ Toxic Materials\*  
☐ Chemicals\* ☒ Elevated Work\* ☐ Hydraulic ☐ Non-ionizing Radiation ☐ Vacuum  
☐ Excavation ☐ Lasers\* ☐ Oxygen Deficiency\* ☐ OTHER \_\_\_\_\_  
\*Does this work require medical clearance or surveillance from the Occupational Medicine Clinic? ☐ Yes ☒ No

**ENVIRONMENTAL CONCERNS** ☒ NONE ☐ Work impacts Environmental Permit No. \_\_\_\_\_  
☐ Atmospheric Discharges (rad/non-rad) ☐ Liquid Discharges ☐ Soil activation/contamination ☐ Waste - Mixed  
☐ Chemical or Rad Material Storage or Use ☐ Oil / PCB Management ☐ Waste - Clean ☐ Waste - Radioactive  
☐ Cesspools (UIC) ☐ Protected areas / species ☐ Waste - Hazardous ☐ Waste - Regulated Medical  
☐ High water / power consumption ☐ Spill potential ☐ Waste - Industrial ☐ OTHER \_\_\_\_\_

Waste disposition by: \_\_\_\_\_

**POLLUTION PREVENTION (P2) / WASTE MINIMIZATION OPPORTUNITY:** ☒ None ☐ Yes

**Facility Concerns**

☒ NONE

☐ Access/Egress Limitations ☐ Impacts Facility Use Agreement ☐ Temperature Change ☐ OTHER \_\_\_\_\_  
☐ Configuration Control ☐ Maintenance Work on Ventilation Systems ☐ Utility Interruptions  
☐ Electrical Noise ☐ Potential to Cause a False Alarm ☐ Vibrations

**Work Controls**

**WORK PRACTICES** ☐ NONE ☐ Exhaust Ventilation ☒ Lockout/Tagout ☐ Spill Containment  
☒ Back-up Person/Watch ☐ HP Coverage ☐ Posting/Warning Signs ☐ Time Limitation  
☐ Barricades ☐ IH Survey ☐ Scaffolding - requires inspection ☐ Warning alarm (i.e. "high level")

**PROTECTIVE EQUIPMENT** ☐ NONE ☐ Ear Plugs ☐ Gloves ☐ Lab Coat ☐ Safety Glasses  
☐ Coveralls ☐ Ear Muffs ☐ Goggles ☐ Respirator ☒ Safety Harness  
☐ Disposable Clothing ☐ Face Shield ☐ Hard Hat ☐ Shoe covers ☒ Safety Shoes ☐ OTHER \_\_\_\_\_

**PERMITS REQUIRED** Initial next to box to show who has responsibility to generate the permit. Permits must be valid when job is scheduled.

☒ NONE ☐ Cutting/Welding ☐ Impair Fire Protection Systems  
(Please attach) ☐ Concrete/Masonry Penetration ☐ Digging/Core Drilling ☐ Rad Work Permit - RWP No. \_\_\_\_\_  
☐ Confined Space Entry ☐ Electrical Working Hot ☐ OTHER \_\_\_\_\_

**DOSIMETRY/ MONITORING** ☒ NONE ☐ Heat Stress Monitor ☐ Real Time Monitor ☐ TLD  
☐ Air Effluent ☐ Noise Survey/Dosimeter ☐ Self-reading Pencil Dosimeter ☐ Waste Characterization  
☐ Ground Water ☐ O<sub>2</sub>/Combustible Gas ☐ Self-reading Digital Dosimeter ☐ OTHER \_\_\_\_\_  
☐ Liquid Effluent ☐ Passive Vapor Monitor ☐ Sorbent Tube/Filter Pump

**Training Requirements** (List below any location specific training requirements)

Lockout/Tagout affected: working @ heights

Based on analysis above, the Walkdown Team determines the risk, complexity, and coordination ratings below.

**ES&H Risk Level:** LOW ☒ MODERATE HIGH  
**Complexity Level:** LOW ☒ MODERATE HIGH  
**Work Coordination:** LOW ☒ MODERATE HIGH

Note: If all the ratings are LOW, the Work Control Coordinator and Service Provider must sign for concurrence on the back side. Further review of the work permit is not required. If any ratings are MODERATE or HIGH, the entire permit must be completed.

3. Both work requester and service provider coordinate on work plan (use attachments for detailed plans)

**Work Plan:** (procedures, timing, equipment, and personnel availability need to be addressed) \_\_\_\_\_

— SEE ATTACHED —

Special Working Conditions Required: N/A


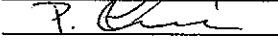

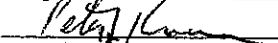
Operational Limits Imposed: No

Post Work Testing Required: No

Job Safety Analysis Required Yes ☒ No

Walkdown Required ☒ Yes ☐ No

**Reviewed By:** Primary Reviewer will determine the size of the review team and the other signatures required based on hazards and job complexity. Primary Reviewer signature means that the hazards and risks that could impact ES&H have been identified and will be controlled according to BNL requirements.

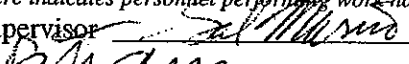
Title	Name (print)	Signature	Life #	Date
Primary Reviewer	Arthur J. Pope		18661	5/26/04
ES&H Professional	D. C. Cristoforo		21828	5/26/04
Other				
Other	C. Pearson		15245	5/27/2004
Work Control Coordinator*	P. Kroon		17500	5/26/04
Service Provider*				

\*Only signatures required for concurrence on LOW rated jobs.

Review done: in series ☒ team

4. Job site personnel fills out this section

Note: Signature indicates personnel performing work have read and understand the hazards and permit requirements (including attached permits).

Job Site Supervisor	Contractor Supervisor
	
Workers: <u>James Laxdaunty</u> Life # <u>8643</u>	Workers: _____ Life # _____
<u>KAMKOY Boris</u> Life # <u>85254</u>	Workers: _____ Life # _____
<u>James Laxdaunty</u> Life # <u>8643</u>	Workers: _____ Life # _____

Workers are encouraged to provide feedback on ES&H concerns or on ideas for improved job work flow. Use feedback form or space below.

5. Work Requester or designee fills out this section

**Conditions are Appropriate to Start Work:** (Work permit has been reviewed, work controls are in place, and site is ready for job.)

Name P. KROON Signature  Life # 17500 Date 5/27/04

6. Work Requester determines if Post Job Review is required ☒ No ☐ Yes (Fill in names of reviewers)

**Post Job Review:**

Name: _____	Signature _____	Life #: _____	Date: _____
Name: _____	Signature _____	Life #: _____	Date: _____

7. Worker provides feedback

**Worker Feedback:** NONE

8. Work Control Coordinator (requesting dept.) checks quality of completed permit and closes out

**Closeout:** Name P. KROON Signature  Life #: 17500 Date: 7/30/04

Comments: \_\_\_\_\_

**Drift Chamber repair in the PHENIX Experimental Hall (bldg. 1008).****Problem**

The unmodified FEM power supply modules on the west Drift Chamber have been failing at an unacceptable rate. This is by now a well-understood problem. Modifications made to the modules on the east carriage, and to some earlier failed units on the west, have proven successful in preventing failures. The remaining modules on the west need to be modified. The intent is to remove these in a few days as soon as possible, modify them at Stony Brook, and re-install them in August.

Access to the installed location of the modules is difficult, as they are located 10 to 20 feet above track level, tucked inside the arc formed by the RICH detector, with the Central Magnet in front of the west carriage. The procedure developed below was used successfully in the past to remove quite a few failed modules.

**Work Plan**

This work is to be done by fully trained and experienced personnel during the '04 RHIC shutdown. Access to the power supply modules is by extension ladders set up between the central magnet (CM) outrigger and the RICH vessel on the west carriage. For the higher modules, two ladders will be secured side-by-side, tied together, to allow climbing by the CM pole piece. All detectors in the IR have been purged of their flammable gas. There is no access to the DC, PC, or TEC gas windows from the location of the ladders and no danger of damage to the gas volume from their installation. The Drift Chamber high and low voltage will be turned off. The 12-ton building crane will be positioned such to place the eye of a sling directly above the work area, then locked out. A harness will be worn and clipped to the sling while the work is being performed. A watch must be present at all times when someone is up on the ladders. All work in the IR will be supervised by Sal Marino.

Work will involve removal of the unmodified modules, and replacing them later after they have been modified and tested.

- Ensure that power to the DC electronics is secured and that the CM power key is locked out of use.
- Erect and secure 1 (or 2 side by side if necessary) extension ladders between the top of the central magnet outrigger and the rich detector.
- Set up a tie off point just above the working position using the building crane and an adequately rated sling.
- The position of the tie off point is to be set for each working level and the crane must be locked out before the worker ascends the ladder.
- The worker is to use a body harness with a short clip-on lanyard and tie off before starting work.
- A watch must be present at all times when a person is on the ladders
- Remove or reinstall power supply modules as necessary.

